MELSEC-Q Series

CONTECWinCPU module

This product is the controller which can be installed with Mitsubishi General programmable controller CPU, MELSEC-Q Series and supports Windows OS.
This product can work as the multiple CPU configuration with programmable controller CPU and it realizes the seam less processing of both controlling and computing. It can boot from a built-in SSD and a CF card in a CF card slot (Type I).
This product has two LAN ports. They realize the open systems for Web, Internet and Intranet.
Embedded-type CPU and chipset have been adopted. The use of readily available parts ensures the ease of the use of the product. In addition, the use of self-customized BIOS allows support to be provided at the BIOS level.

Model	CPU	Storage	OS
PPC-100-DC5511	Intel Atom N450 1.66GHz / 1GB DDR2 SDRAM	4GB SSD	Windows Embedded Standard 2009 Japanese
PPC-100-DC5311		4GB CF card	
PPC-100-DC551A		4GB SSD	Windows Embedded Standard 2009 English
PPC-100-DC531A		4GB CF card	

* Specifications, color and design of the products are subject to change without notice.

* Please contact us for using OS in English or other languages.
https://www.contec.com/contact/

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Features

MELSEC-Q Series programmable controller CPU modules cover sequence controlling. This CONTECWinCPU module covers computing. The combination of them realizes the seam-less processing of information and control data.

Very small Windows OS system (2-slot size of a MELSEC-Q series programmable controller CPU)

Adopt Intel® Atom™ processor N450, belonging to energy saving platform. It manages both enough performance and energy saving.

Various interfaces are installed as the standard. 1000BASE-T LAN, USB2.0, CF card slot and so on.

The use of a Contec-customized BIOS (mfd. By Phoenix-Award) allows the support provided at the BIOS level.

P A CF card can be installed as an external recording media. The use of it is preferable if it works where shock and vibration are exist and works for a continuous long time.

Built-in SSD has double write protect functions (an EWF function of OS and write procect function of DIP switch). It realizes more reliable protection for important data.

Supported OS

・Windows Embedded Standard 2009

Option List

CF Card

CF-1GB-B	1GB CompactFlash for Fix Disk
CF-2GB-B	2GB CompactFlash for Fix Disk
CF-4GB-B	4GB CompactFlash for Fix Disk
CF-8GB-B	8GB CompactFlash for Fix Disk

TFT color liquid-crystal display

<Analog RGB types>

FPD-H21XT-AC	(15 inch 1024 x 768 dots, Panel mounted type)
FPD-L21ST-AC	(12.1 inch 800 x 600 dots, Panel mounted type)
FPD-M21VT-AC	(10.4 inch 640 x 480 dots, Panel mounted type)

Touch-panel cable for an analog RGB display

IPC-CBL3-2	AT host Touch panel, COM cable (2m)
IPC-CBL3-5	AT host Touch panel, COM cable (5m)

Specifications

Item		Content
CPU		Intel® Atom™ Processor N450 1.66GHz
Chipset		Intel® ICH8M
Memory	L1 Cache	Instruction 32KB + Data 24KB
	L2 Cache	512KB
	Main memory	1GB (3.3V 200-pin DDR2 SO-DIMM DDR667Socket x 1)
Video	Controller	N450 built-in
	Video RAM	Main memory shared
	CRT I/F	Analog-RGB 15-pin HD-SUB connector
	Resolution	1,400 × 1,050@60Hz (1,677 colors)
Serial I/F		RS-232C-compliant: 1ch (9-pin D-SUB connector) baud rate: 50 - 115200bps
LAN	I/F	1000BASE-T/100BASE-TX/10BASE-T RJ-45 connector x 2
	Controller	Intel 82574L
CFcard slot		CF CARD Type I (Only for the memory card of IDE connection) *1 Indication: access LED(green)x1 *2、-CFJ, -CFE models have a CFcard 4GB.
Built-in SSD *3		Built-in flash drive 4GB
USB I/F		USB2.0-complicant 5ch (front 3ch, bottom 2ch) Transfer rate: 480Mbps Supply power:+5V each channel 0.5A max. *4
Watch dog timer		2ch Time-up period: system WDT 20msec - 2sec, user WDT 10msec - 10sec
General I/O *5*6		Terminal block [1, 2] Input for shutdown (current drive input) Terminal block [3] Output to notify shutdown completion (open collector output) Terminal block [4] Output to nofity the start of watch dog timer (open collector output)
RTC/CMOS		Lithium battery backup life : 10 years or more (when no power input, at 25°C) The real-time clock is accurate within ±3 minutes (at 25°C) per month
Indication		RDY (green), B.RUN (green), ERR. (red), USER (red), BAT.(orange), EXIT (green), CF/SSD (green)
Control		Reset PUSH switch, DIP switch 4-pole, DIP switch 6-pole, 3-position toggle switch
Supported OS		Windows® Embedded Standard 2009
The number of base unit slots this module occupies		2 slots
physical dimensions [mm]		55.2(W) x 115.0(D) x 98.0(H) (Excluding protrusions)
DC5V internal current consumption		3.0A (Max.) *7
Acceptable momentary power failure time		Depending on the power supply module
Weight		PPC-100-DC5511, PPC-100-DC551A: 440g PPC-100-DC5311, PPC-100-DC531A: 450g (Including CF card, Fittings and screws to fix a CF card)

*1: When power is on, you can not push in / pull out a CF card.
Memory card is supported but other purposes are not supported.
*2: Access LED shows the access of both a CF card and built-in SSD.
*3: Bulit-in SSD is used as OS space. SSD has rewritable life (1 million times).
For details, refer to “Built-in SSD” of “Chapter 5 Each Component Function”
*4: Current capacity shows the maximum value the connector supports.
But the actual value is limited because the total current can not exceed the capacity of the power supply module.
Therefore the actual value may differ from this maximum value.
*5: General I/O is not evaluated by UL.
*6 Use noise filters when using under the condition with much noise.

Name	Type	Maker
Noise filter for general I/O	NAC-06-472	Mfd. By COSEL

*7: This does not include the current consumption by any peripheral device (such as the CF Card and USB device)

Installation Environment

Item	Condition
Surrounding air temperature	0 - 55°C
Surrounding storage temperature	-25 - 75°C
Surrouding operating humidity	5 - 95%RH (No condensation)
Surrouding storage humidity	5 - 95%RH (No condensation)
Vibration resistance	Conforming to JIS B 3502 IEC61131-2 With intermittent vibration (Tested 10 times (for 80 minutes) in each of the X, Y, and Z directions) Frequency / Acceleration / Amplitude 5≦f< 8.4Hz / - / 3.5mm 8.4≦f< 150Hz / 9.8m/s² / - With continuous vibration Frequency / Acceleration / Amplitude 5≦f< 8.4Hz / - / 1.75mm 8.4≦f< 150Hz / 4.9m/s² / -
Shock resistance	Conforming to JIS B 3502、IEC61131-2 (147m/s², 3 times in each of 3 direction)
Operating ambiance	No corrosive gas
Operating altitude	2000m or less *3
Installation location	Inside the control panel
Overvoltage category *1	II or less
Pollution degree *2	2 or less
Equipment category	Class I

*1 The overvoltage category of a device indicates which distributor in the range from public distribution network to. machinery the device is assumed to be connected to. Category II applies to devices to which power is supplied from fixed facilities. The surge voltage of those devices is 2500V whose rated voltage is 300V.
*2 The index indicating the degree to which conductive substances are generated in the operating environment. Pollution level 2 indicates the environment that generates only nonconductive pollutants while allowing accidental condensation to cause temporary conduction.
*3 The module may fail and cannot be used in an environment in which the air is compressed to over the atmospheric pressure generated at an altitude of around 0m.

⚠ CAUTION
When a commercial peripheral device (such as a CF Card and USB device) is installed, satisfy the installation environment conditions specified for that device or those for the module, whichever are harder.

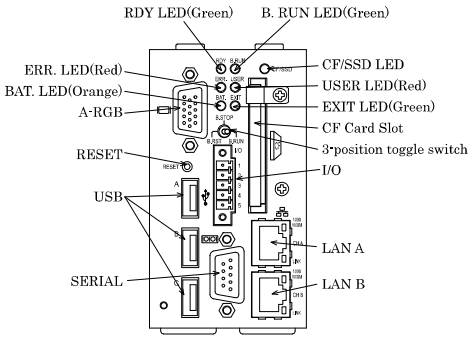
Packing List

Name	PPC-100-DC5511 PPC-100-DC551A Pcs.	PPC-100-DC5311 PPC-100-DC531A Pcs.
The main body	1	1
CF card	0	1 *2
Fittings and screws to fix a CF card	1set	1set *2
Coonector cover for RGB	1	1
Connector cover for SERIAL	1	1
Connector cover for LAN	2	2
Connector cover for USB	5	5
Connector for terminal block	1	1
Product guide	1	1
Precaution List (1)(2)	2	2
Royalty consent contract (OS)	1	1
Royalty consent contract (Recovery soft)	1	1
Royalty consent contract (Driver)	1	1
Setup Procedure Document	1	1
Notes on Windows Embedded Standard	1	1
Recovery Media *1	1	1
PPC-DRV-03	1	1
Fixing bandage	2	2

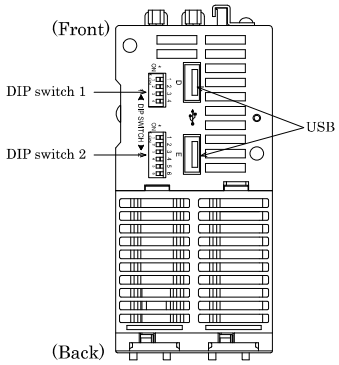
*1: User’s manual is included in recovery media but refer to CONTEC web site for the latest information.. Adobe® Reader® is necessary to read user’s manual (which is inclued in : ¥Manual)
*2: It is attached to the main body.

Component Locations

Front

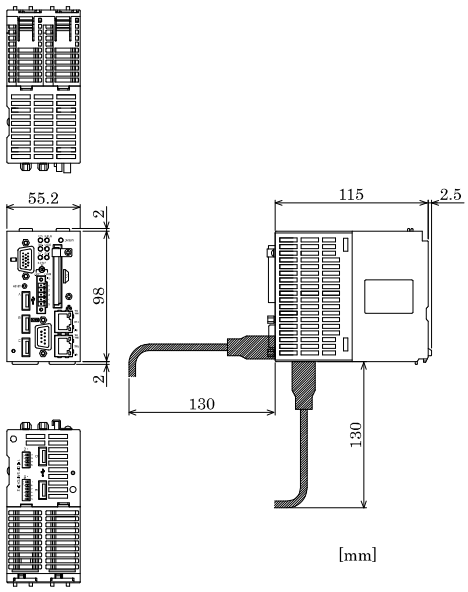


Bottom



Name	Function
CF-CARD	CF card slot (only for a CF card with IDE connection)
Built-in SSD	SSD for OS
LAN A	Ethernet 1000BASE-T/100BASE-TX/10BASE-T RJ-45 connector
LAN B	Ethernet 1000BASE-T/100BASE-TX/10BASE-T RJ-45 connector
RDY LED	Indicates hardware ready
B.RUN LED	Indicates the running of bus interface driver
ERR. LED	Indicates system error
USER LED	Indicates user error
BAT. LED	Indicates battery alarm
EXIT LED	Indicates shutdown (power off) or hardware reset
I/O	I/O terminal for shutdown, WDT output terminal
SERIAL	Serial port connector (9-pin D-SUB, male)
A-RGB	CRT connector (15-pin HD-SUB, female)
USB	USB port connector x 5
RESET	Push switch for hardware reset
3-position toggle switch	Control switch for bus interface driver
DIP switch 1	Switch for CMOS clear, ROM clear, SSD Enable and SSD write protect
DIP switch 2	Switch to select the reset method
CF/SSD LED	Indicates the access of SSD or a CF card

Physical Dimensions



Combination with the MELSEC-Q Series

Overview

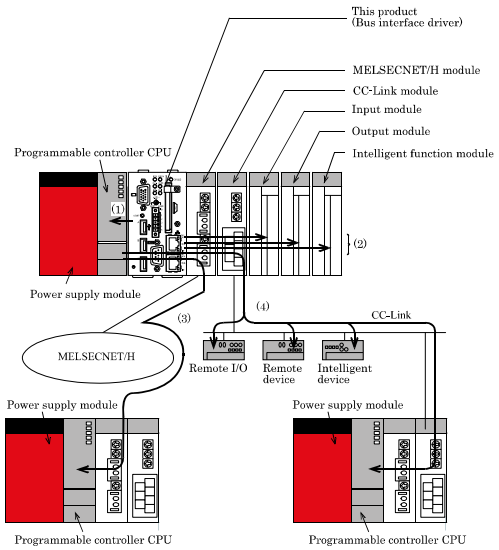
This product can communicate with the MELSEC-Q Series programmable controller CPU module, intelligent function module and I/O module at high speed by connecting the buses using the MELSEC-Q Series bus module.

Please refer to the manual of QCPU used for details for the restriction matter.

Note that the bus interface driver is used for communication with the various modules in the MELSEC-Q Series, including the programmable controller CPU.

For details on each MELSEC-Q Series module and the bus interface driver, refer to the relevant manuals.

Access Forms



The Module can access various modules in the following forms.

(1) Access another programmable controller CPU in the local system.

(2) Access the I/O module or intelligent function module in the local system.

(3) Access a programmable controller CPU via the MELSECNET/H module.

(4) Access a remote I/O, remote device, intelligent device, or programmable controller CPU via the CC-Link module.

Multiple CPU Configuration

Multiple CPU Configuration Including this product

This product supports both of the single-CPU configuration with the Module as only one CPU and the multiple CPU configuration with this product combined with other CPUs.

The maximum number of this product to be installed is only one.

- Main base unit (Q3□B)

Module No.1		Number in which CPU module since Module No.2 can be installed							Maximum number of modules to be installed (Module No.1 is contained.)
		High performance model QCPU	Universal model QCPU		Process CPU	Motion CPU		CONTEC WinCPU module	
			Q00UCPU Q01UCPU Q02UCPU	Q03UDCPU Q04UDHCPU Q06UDHCPU Q10UDHCPU Q13UDHCPU Q20UHDCPU Q26UDHCPU Q03UDECPU Q04UDEHCPU Q06UDEHCPU Q10UDEHCPU Q13UDEHCPU Q20UDEHCPU Q26UDEHCPU Q50UDEHCPU Q100UDEHCPU		Q172CPUN Q173CPUN Q172CPUN-T Q173CPUN-T Q172HCPU Q173HCPU Q172HCPU-T Q173HCPU-T	Q172DCPU Q173DCPU		
Basic model QCPU		–	–	–	–	1	–	1	3
High performance model QCPU / Process CPU		3	–	3	3	3	–	1	4
Universal model QCPU	Q00UCPU Q01UCPU Q02UCPU	–	–	–	–	1	–	1	3
	Q03UDCPU Q04UDHCPU Q06UDHCPU Q10UDHCPU Q13UDHCPU Q20UHDCPU Q26UDHCPU Q03UDECPU Q04UDEHCPU Q06UDEHCPU Q10UDEHCPU Q13UDEHCPU Q20UDEHCPU Q26UDEHCPU Q50UDEHCPU Q100UDEHCPU	3	–	3	3	–	–	1	4

- : The combination is impossible.

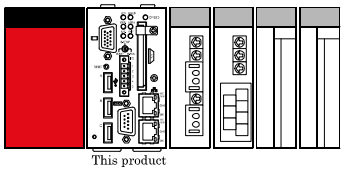
⚠ CAUTION

1) This product cannot be Module No.1 in the multiple CPU configuration. The multiple CPU configuration requires a programmable controller CPU.
2) For the multiple CPU configuration, place this product at the right end of a series of CPUs.
3) Although a total of up to three programmable controller CPUs and motion CPUs can be installed, the number of modules installable is restricted by the power capacity of the power supply module (Q61P). See “Restriction by Power Capacity” in “Notes” for details.

CPU Configuration Diagrams

- Single-CPU configuration with this product as only one CPU

  Module No.1···This product

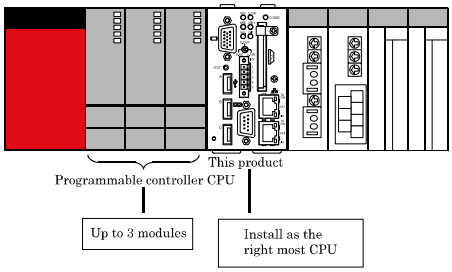


- Multiple CPU configuration with this product in combination with programmable controller CPUs

Maximum configuration with this product and three programmable controller CPUs

Modules No.1 - 3··· Programmable controller CPU

Module No. 4···This product

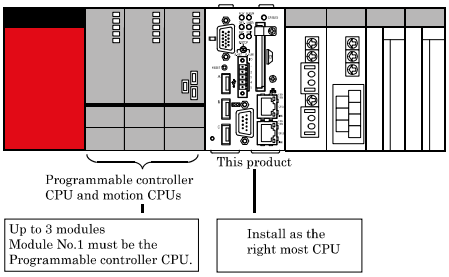


- Multiple CPU configuration with this Module in combination with a programmable controller CPU and motion CPUs

Module No.1··· Programmable controller CPU

Modules No.2 - 3···Motion CPU

Module No.4···This product


This product
Programmable controller CPU and motion CPUs
Up to 3 modules
Module No.1 must be the Programmable controller CPU.
Install as the right most CPU

⚠ CAUTION

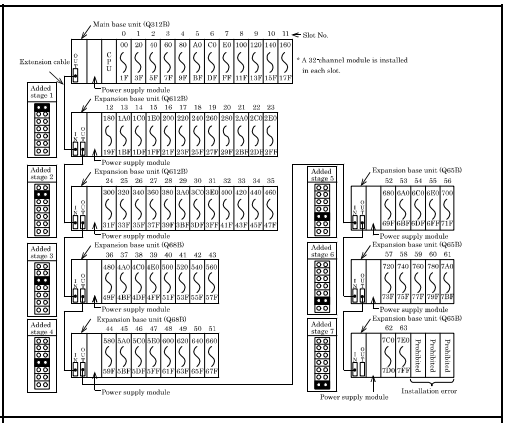
The total number of programmable controller CPUs and motion CPUs installable is restricted by the power capacity of the Q Series power supply module (Q61P). When a large number of I/O modules and intelligent function modules are used, the equivalent restriction applies to them in the same way. For details, see “Restriction by Power Capacity” in “Notes”.

Notes

Maximum Number of modules Installed and Maximum Number of I/O Channels

When installing single-CPU configuration

Refer to the maximum mountable number and the maximum I/O number as follows.

Example of system expansion	
Maximum number of stages added	7 stages
Maximum number of I/O modules installed	64 modules
Maximum number of I/O channels	4,096 channels
Maximum number of MELSECNET/H modules installed	4 modules
Maximum number of CC-Link modules installed	8 modules
Maximum number of interrupt modules installed	1 module

Maximum number of other intelligent function modules installed	64 modules
Notes	(1) Up to seven expansion base units can be added. (2) The total length of extension cables must be 13.2 m. (3) When using an extension cable, do not bundle it with route it near any main circuit (high voltage, large current) line. (4) Set the expansion stage numbers in ascending order without number duplication. (5) Connect each extension cable from the extension cable connector OUT on one base unit to the extension cable connector IN on the expansion base unit at the next stage. (6) Installing 65 modules or more results in an error.

- When installing multi-CPU configuration

Refer to “QCPU user’s manual (multiple CPU system)”.

- Restriction by Power Capacity

The current consumption of this product is the total value of one of the main body and ones of peripheral devices. Take care that the summation of the current consumption of this product and ones of other modules should not exceed the power capacity of your Q series power module.

(For the actual current consumption values of modules, refer to their manuals.)

- Multiple CPU configuration with a CF card

As the Q61P cannot be used if the total current consumption of the modules exceeds 6A, consider using the Q64PN (power capacity = 5VDC/8.5A) instead.

Number of CPU modules			Main base unit	Total current consumption (A)	Remaining current capacity (A)	
Programmable controller CPU	Motion CPU	This product				
Q25HCPU (0.64A)	Q173CPUN (1.25A)	PPC-100-DC5xx CF-1GB-B (3.10A) *1	Q312B (0.087A)		Q61P (6A)	Judgement
0	0	1	1	3.187	2.813	O
1	0	1	1	3.827	2.173	O
2	0	1	1	4.467	1.533	O
3	0	1	1	5.107	0.893	Δ
1	1	1	1	5.007	0.923	Δ
2	1	1	1	5.717	0.283	Δ
1	2	1	1	6.907	- 0.907	x *2

The remaining current capacity is used as a criterion.

O: 1A to less than 3A: The system can grow.

Δ: 0A to less than 1A: The configuration is acceptable but not expandable.

×: Less than 0A: The configuration is not acceptable.

*1 Excluding the consumption current in the USB peripherals.

*2 The system can be configured by using a Q64PN instead.

- Configuration with many I/O modules and intelligent function modules

If the total current consumption by the modules on the main base unit, including this product and peripheral devices, exceeds the power capacity used, move I/O modules and intelligent function modules to an expansion module. The total current consumption by the modules on each base unit must not exceed the power capacity. If the system configuration is short of power capacity even with one expansion base unit added, add more than one expansion base unit.